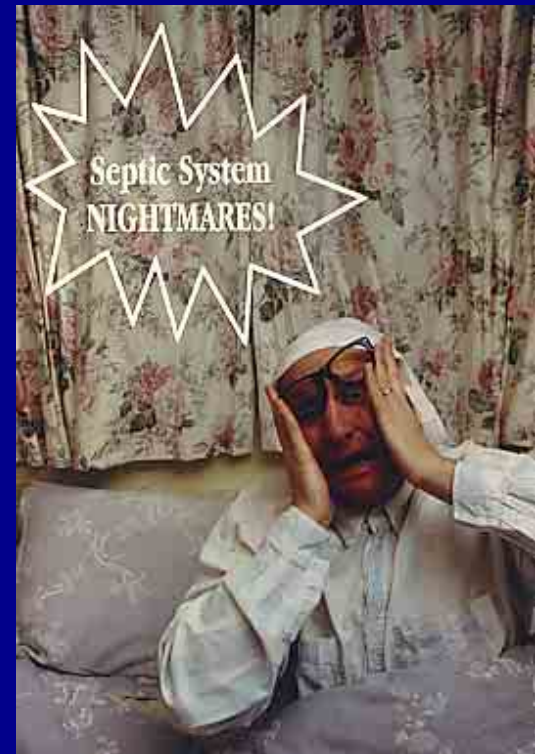


How to Avoid....

Pollution From Septic Tanks

- Proper Installation
- Proper inspections and Maintenance
- Proper Installation
- Following DEP Title 5 Guidelines



In the United States, over one-third of the population treats its sewage with an on-site septic system.

1,000,000,000,000!!

That means that approximately one
trillion gallons of wastewater is
deposited into the ground every year!

If a septic system is working properly, it effectively removes disease-causing bacteria.

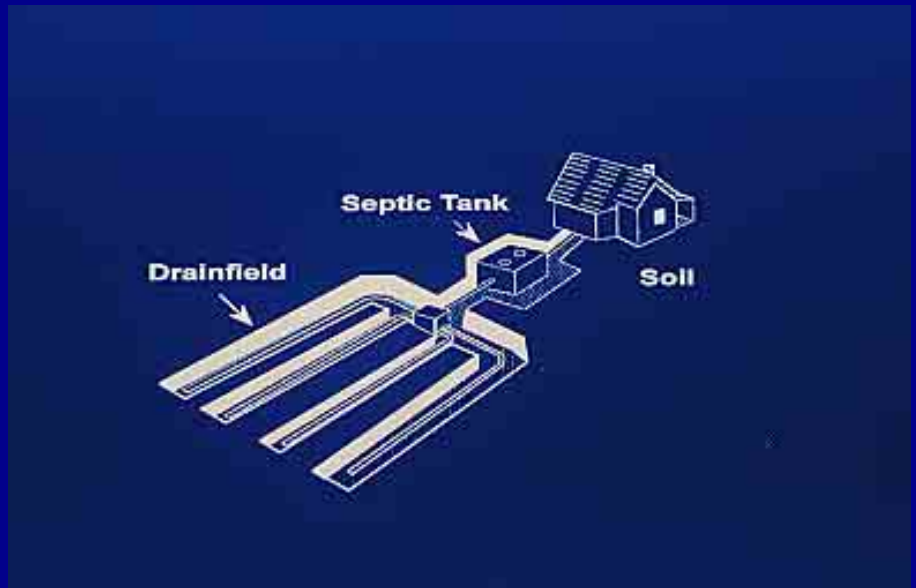
But if it's working
improperly, there's a high
risk of ground and surface
water contamination!



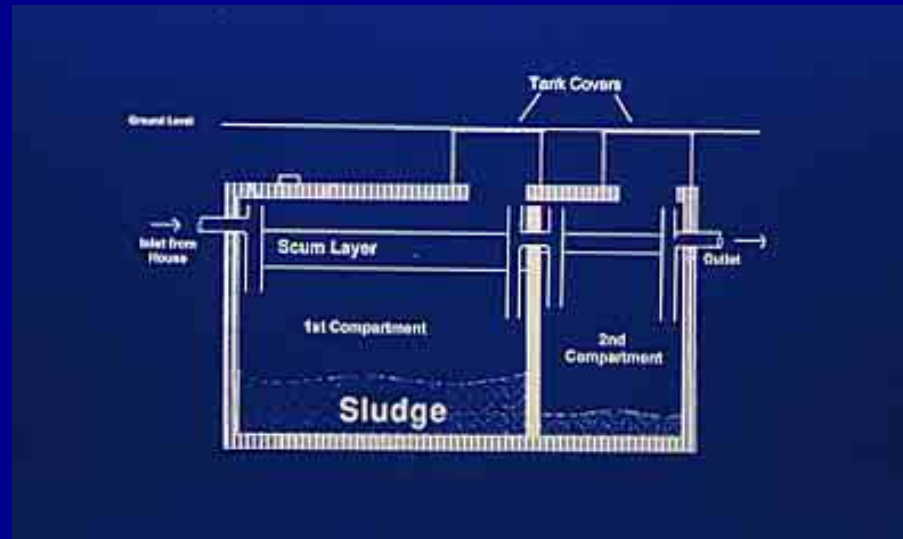
- Pollution from Septic Systems can contaminate drinking water as well as water bodies used for recreation and wildlife habitats

How a Septic System Works

- The way a septic system works is that wastewater from your house (water from your washing machine, shower, sinks, and toilet) flows into the septic tank. This is where the solids are separated from the liquids. The solids are broken down and stored in the tank. The liquid material, or effluent, flows on into your drainfield where it's filtered through the soil.



- This shows a cross-section of a typical septic tank. Some older tanks only have one chamber. Wastewater flows from your house and is deposited into the first chamber. Heavier solids settle to the bottom as sludge, while lightweight solids, such as grease and toilet paper, float to the top and form a scum layer. Naturally occurring bacteria decompose about 50% of the waste. As new wastewater enters the tank, the partially treated water, or effluent, is pushed on into the second chamber where it settles further before flowing on out into the drainfield.



- This is a conventional septic tank being installed. It has three lids that can be lifted off so the interior can be viewed.



- To install a conventional drainfield, trenched are first dug in the soil.



- The pipes lay on a bed of gravel, then are covered with a layer of gravel which is covered with dirt. The effluent drips out through tiny holes in the pipe. It filters through the soil and is treated by microorganisms that are found in the soil.



- There are two very important considerations when installing a septic system: proper soil type and adequate percolation distance to the water table.

- The best soil for a drainfield is soil that is deep, well-drained, and medium-textured. There are tiny spaces around the soil particles for the water to pass through. Silt loam or loam soil type is most desirable.



- An example of poor soil would be soil with a high clay or sand content. Soils with a high clay content, such as in this picture, are so compact that the effluent cannot flow through. Coarse, sandy soils allow effluent to flow too quickly downward to the ground water and do not provide adequate time for solids and pathogens to filter out.



- There needs to be an adequate distance between the drainfield and the water table so that the effluent can be treated properly and not contaminant the ground water. Your local permit center may do a test before issuing a septic permit to make sure that the drainfield is located in an appropriate area. As you can see in this slide, the water table is quite high in this spot.



Common Alternatives:

- Mound System
- Sand Filter System

- In a mound system, the drainfield is raised above the natural soil surface and is made of a special sand fill material. A gravel-filled trench is built into the mound and pipes are laid in the trench. Now the effluent can filter through the mound and be treated by the time it reaches the water table.



- In a sand filter system, there are two drainfields. The first drainfield (which is being installed in this slide) consists of a concrete box that is filled with layers of sand and gravel. The wastewater filters through the sand and is collected in a gravel underdrain. It is then pumped into a conventional drainfield (which is not in view in this slide).



- These systems require the use of a pressurized pump system. The pump chamber collects the effluent after it leaves the septic tank and moves it out through the pipes in even doses.



Other Alternatives:

- Composting Toilets
- Nitrogen-Removing Systems
- Peat Bio-Filter Systems

Reasons for Failure:

- Inadequately sized system for number of occupants
- Installed on impermeable soils
- Not properly constructed
- Not cared for properly

- Some signs of a failing system would include thriving green grass when grass in other areas is turning brown.



- Another sign of failing systems is seepage in nearby ditches, sloughs, or streams.

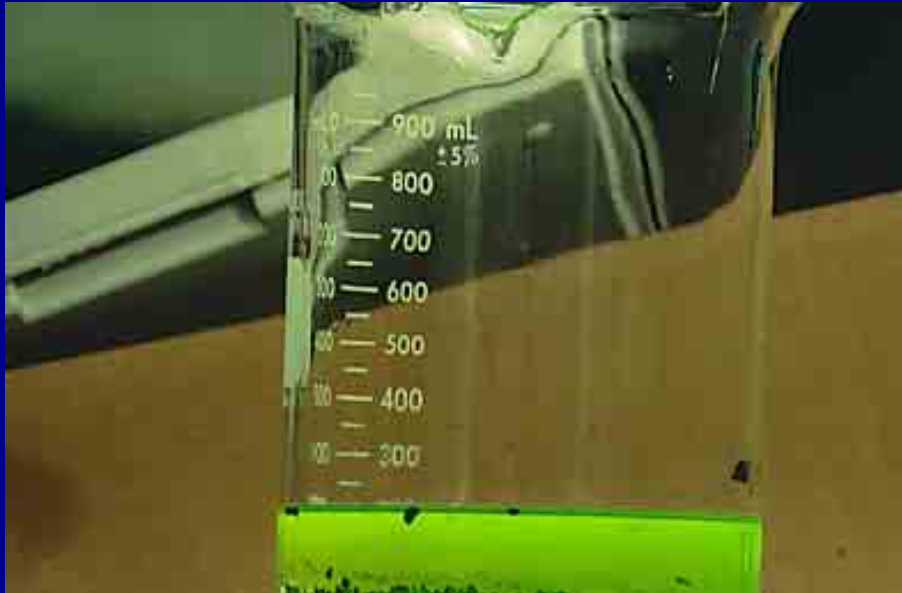




- Another example of seepage from a failing septic system.



- Wastewater bubbling out of the ground will cause bad odors in the vicinity of your house.



- Dye tests can be performed by your local Health or permit departments that can pinpoint which systems are failing. Dye is poured into the toilet and flushed.



- Then the technician goes to an area that has shown signs of seepage.



- Within a short period of time, the dye appears.



- It then shows the path that the wastewater travels. As you can see here, it goes right into a slough which leads into the bay. It's shocking to realize that there is a problem with raw sewage contaminating our water in the United States.

Health Impacts

Environmental Impacts

Economic Impacts

Health Impacts:

- Drinking water can be contaminated; infections and diseases, such as dysentery, typhoid fever, and hepatitis, can be transferred to people and animals
- Excessive nitrates can cause “blue baby” syndrome, which is fatal.

Environmental Impacts:

- Excessive nutrients and bacteria can harm marine plants and animals. When nutrients, such as nitrogen and phosphorus, enter coastal waters, they act like fertilizers and cause much plant growth. Algae can form huge blooms which block the sunlight in the water. This can shade and kill beneficial plants.
- As plants disappear, so do the animals that depend on them. When the algae starts to die and decompose, the oxygen in the water can be used up which can cause massive fish kills.



- Salmon and trout are some of the victims in these fish kills.

Economic Impacts:

- Failing septic systems can cause the depreciation of real estate value. It is much harder to sell a home that has a failing system. And if you are trying to sell your home and your neighbor has a failing system, it's much harder to sell your home – especially if there's a bad odor!
- There's a decline in recreational activities, such as swimming and boating due to excessive plant growth or contaminated waters. Failing systems can cause the loss of commercial industries.

Economic Impacts:

- Shellfish closures due to septic contamination has been a big problem in this area. Oysters for example, filter their food from the surrounding water. If the water is not clean, the oysters are also filtering harmful bacteria and viruses. This usually does not harm the oysters, but it does harm the humans that eat them.



Reduce impacts by
Properly Caring
for your on-site septic system



- If you have a garbage disposal, it is best not to use it. Garbage disposals grind vegetable matter up into tiny pieces that float to the top of the septic tank and greatly increase the size of the scum layer. Households that use garbage disposals have to pump their systems three times as frequently.



Don't pour
grease down the
drain! It's best to
put it into a
container for
disposal.



- Don't pour hazardous chemicals, such as solvents, paint, and pesticides down the drain. Even if they don't kill the bacteria in the tank, they pollute the groundwater.



- It's okay to use reasonable amounts of household chemicals, such as bleach. A small amount will be diluted enough not to harm the system. Be cautious, however, when using crystal drain openers. One cup can kill the bacteria in your tank. When using detergents, liquid is better. Powders can clog the pipes in your drainfield.



- It's best not to do all of your laundry on the same day, as the system can become overloaded with too much water.

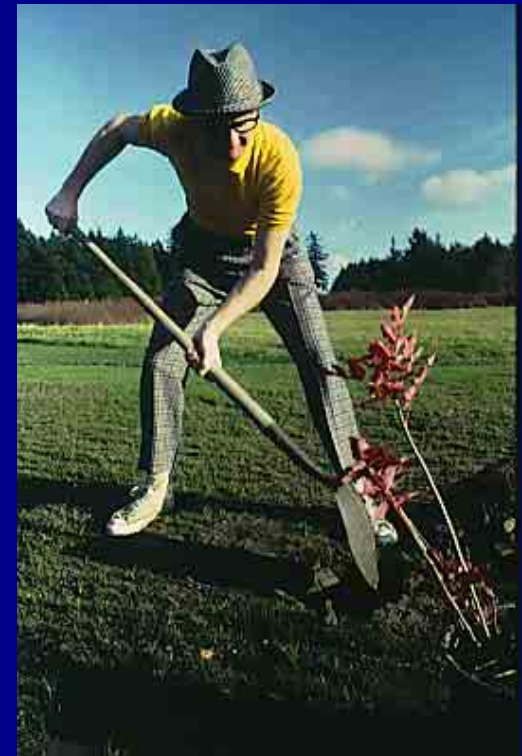
Water Conserving Tips:

- Install water-saving devices
- Take shorter showers
- Coordinate high water usage with other family members

- Do not put non-digestible materials into your toilet, such as cigarettes, diapers, and newspapers



- It's okay to plant grass on your drainfield, but the roots of shrubs and trees could interfere with the pipes. Never drive over your drainfield, as that can crush the pipes.



Pump Regularly

Pump Regularly

Pump Regularly



- Have your tank pumped approximately every three years or until a pattern is established. Over the years the sludge and scum layers in your tank keep building. If your tank gets too full, solid particles will start flowing into your drainfield and clog the pipes and the soil. Never wait until you have a problem to pump your tank because it may be too late. Replacing a drainfield can cost THOUSANDS of dollars!

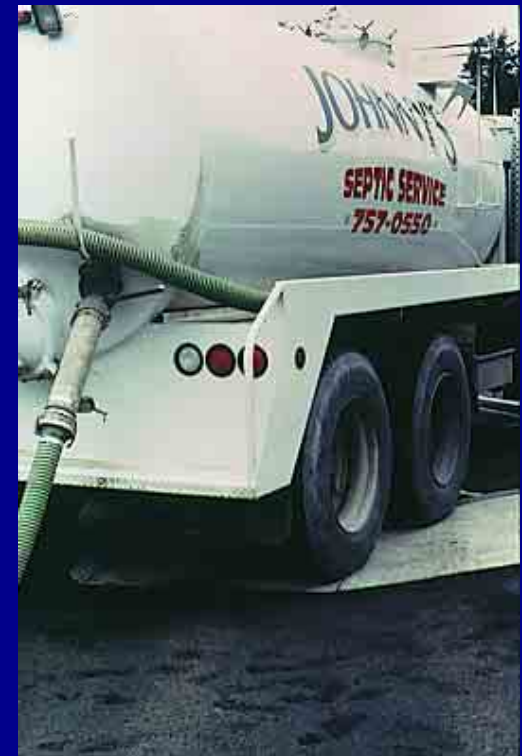
- Using a septic system additive is not an alternative to pumping. Although the additive market is a booming business, extensive research has shown that additives are ineffective, and in some cases, can harm your tank.



- You can learn to inspect your tank yourself. NEVER try to enter a tank because fumes can be fatal!



- Or call a local pumper to inspect your tank.



- And pump it out if necessary.



- Always check to make sure the baffles in the tank are in good condition. Over time they may corrode and drop off into the tank.





- It's a good idea to walk around your drainfield every year to check for signs of failure.

Caring for your septic system properly can:

- Save thousands of dollars in costly repairs
- Reduce impacts to the environment
- Protect the quality of life in your community

- You can get a good night's sleep knowing that your system is working as it should!





Reducing pollution from septic systems